

## PATENT COOPERATION TREATY

PCT

**NOTIFICATION CONCERNING  
THE FILING OF AMENDMENTS OF THE CLAIMS**  
(PCT Administrative Instructions, Section 417)

From the INTERNATIONAL BUREAU

To:

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(day/month/year)

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Applicant's or agent's file reference

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**IMPORTANT NOTIFICATION**

International application No.

PCT/EP2004/007068

International filing date

(day/month/year) 30 June 2004 (30.06.2004)

Applicant

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1. The applicant is hereby notified that amendments to the claims under Article 19 were received by the International Bureau on:

11 November 2004 (11.11.2004)

2. This date is within the time limit under Rule 46.1.

Consequently, the international publication of the international application will contain the amended claims according to Rule 48.2(f), (h) and (i).

3. The applicant is reminded that the international application (description, claims and drawings) may be amended during the international preliminary examination under Chapter II, according to Article 34, and in any case, before each of the designated Offices, according to Article 28 and Rule 52, or before each of the elected Offices, according to Article 41 and Rule 78.

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## New patent claims

1. A gas sensor (1) for detecting a gas component in the exhaust gas of an internal combustion engine, having a control and evaluation unit and a sensor unit (2) with an electrode structure (20) with a first terminal (4) and a second terminal (5), it being possible for an electrical measured value that is present between the first terminal (4) and the second terminal (5) of the electrode structure (20) to be supplied to the control and evaluation unit to determine the concentration of the gas component, characterized in that the control and evaluation unit applies a bias voltage (17) to the first terminal (4) and/or to the second terminal (5) of the electrode structure (20), it being possible for the level of the bias voltage (17) to be set in dependence on a characteristic of the sensor and/or in dependence on a loading of the sensor in such a way that sensor behavior with long-term stability, for example with respect to the zero-point signal and/or a sensitivity, is achieved over the operating time.
2. The gas sensor as claimed in claim 1, characterized in that the level of the bias voltage (17) can be set in dependence on a reference value of the measured variable.
3. The gas sensor as claimed in claim 1 or 2, characterized in that the level of the bias voltage (17) can be set in dependence on the sensitivity of the sensor unit (2).
4. The gas sensor as claimed in one of the preceding claims, characterized in that the level of the bias voltage can be set in dependence on an electrical

reference variable that can be measured between the electrode structure (20) of the sensor unit and a circuit of the exhaust gas sensor (1).

- 5     5. The gas sensor as claimed in claim 4, characterized  
in that the gas sensor (1) has a circuit (6, 8, 9)  
for temperature measurement, covered by an  
insulating layer (3), the sensor unit (2) being  
applied to the insulating layer (3) and it being  
10     possible for the level of the bias voltage (17) to  
be set in dependence on an electrical reference  
variable that can be measured between the electrode  
structure (20) of the sensor unit (2) and the  
circuit (6, 8, 9) for temperature measurement.
- 15     6. The gas sensor as claimed in claim 1, characterized  
in that the level of the bias voltage (17) can be  
set in dependence on the operating time of the gas  
sensor (1).
- 20     7. The gas sensor as claimed in one of the preceding  
claims, characterized in that the bias voltage (17)  
has a positive polarity in relation to an operating  
voltage of a circuit of the exhaust gas sensor.
- 25     8. The gas sensor as claimed in one of the preceding  
claims, characterized in that the exhaust gas  
sensor (1) is designed for sensing the gas  
component ammonia.
- 30     9. A method for operating an exhaust gas sensor (1) to  
determine the concentration of a gas component in  
the exhaust gas of an internal combustion engine,  
the exhaust gas sensor (1) having a gas-sensitive  
35     sensor unit (2) with an electrode structure (20)  
with a first terminal (4) and with a second

terminal (5), and an electrical measured variable correlating with the concentration of the gas component being picked up between the first terminal (4) and the second terminal (5) of the electrode structure (20), characterized in that a bias voltage (17) is applied to the first terminal (4) and/or the second terminal (5) of the electrode structure (20), the level of the bias voltage (17) being set in dependence on a characteristic of the sensor and/or in dependence on a loading of the sensor in such a way that sensor behavior with long-term stability, for example with respect to the zero-point signal and/or a sensitivity, is achieved over the operating time.

10. The method as claimed in claim 9, characterized in that the level of the bias voltage (17) is set in dependence on the zero-point drift of the electrical measured variable

11. The method as claimed in claim 9 or 10, characterized in that the level of the bias voltage (17) is set in dependence on a sensitivity drift of the exhaust gas sensor (1).

12. The method as claimed in one of claims 9 to 11, characterized in that the level of the bias voltage (17) is set at predeterminable points in time.

13. The method as claimed in one of claims 9 to 12, characterized in that the level of the bias voltage (17) is set every nth time the exhaust gas sensor (1) is switched on.

14. The method as claimed in one of claims 9 to 12, characterized in that the bias voltage (17) is set

positively in relation to an operating voltage of a circuit of the exhaust gas sensor (1) that is electrically insulated from the sensor unit (2).